DURHAM
1869
CITY OF MEDICINE

CITY OF DURHAM | NORTH CAROLINA

Date: **November 17, 2015**

To: **Thomas J. Bonfield, City Manager**
Through: **W. Bowman Ferguson, Deputy City Manager**
From: **Donald F. Greeley, Director, Water Management**
Subject: **Professional Engineering Services for the Hydraulic Model Update, Water Distribution System Study, and Water Audit Project - Award of Contract to McKim & Creed, Inc.**

Executive Summary

In November 2014, the Department of Water Management (DWM) issued a Request for Qualifications (RFQ) for Professional Engineering Services to update the City's hydraulic water model; evaluate the water distribution system for efficiency and capacity improvements; and a water audit to identify potential leakages throughout the system and loss of water revenue. The results of each of these project tasks will assist DWM in its ongoing, City-wide rehabilitation and upgrade programs.

The DWM received two (2) responses to the RFQ. The engineering firm McKim & Creed, Inc. was selected and a scope of services for the project has been negotiated in the amount of $907,000.

Recommendation

The Department of Water Management recommends that the City Council:

1. Authorize the City Manager to execute a contract with McKim & Creed, Inc. for Professional Engineering Services in an amount not to exceed $907,000 for the Hydraulic Model Update, Water Distribution System Study, and Water Audit Project;
2. Establish a contingency fund for the contract in the amount not to exceed $90,000;
3. Authorize the City Manager to negotiate amendments to the contract provided that the total project cost does not exceed $997,000.

Background

The DWM is responsible for infrastructure operation, maintenance, evaluation, rehabilitation and improvement of the water distribution system throughout the City of Durham. The DWM currently utilizes a hydraulic model originally developed in 2002 to help evaluate major distribution system improvements like interconnections with other water systems; elevated storage tanks and pressure zones; transmission main routes and connections; and extensions to future development.

The proposed project consists of updating the hydraulic model and performing a City-wide evaluation of the water distribution system. The new model will include recently-constructed infrastructure and demand allocations reflective of recent demand projections, actual meter data, future development, re-development, re-zoning, in-fill, and annexation. Field investigations will be performed to calibrate the model so that it accurately reflects flowrate and pressure conditions measured in the distribution system.

It is typical to update hydraulic models of large systems, like the City's, approximately every 10 to 15 years. The major factors that influence the frequency include the magnitude and timing of infrastructure improvements like elevated storage tanks (ESTs), booster pumping stations, new pressure zones, and transmission mains; as well as system expansion and new, large demands. The City of Durham has experienced all of these recently, stemming from the Hillandale Waterline Replacement projects, to the Raleigh US70 Interconnect, Southern Reinforcing Main projects, the Angier EST, and the new Southeast Pressure Zone.

The distribution system study will identify areas of needed reinforcement and/or water main replacement. The study will also identify projects needed to support future expansion. A time schedule for these improvements is included in the project work. This information will aid in planning the capital improvements program for water infrastructure.

Also, a water audit is included in the project. The water audit is a means of assessing where water losses via leakage and/or unmetered withdrawals may be occurring. Pending results of the audit, a formal water loss control program may be developed in this project that includes an implementation plan for leak and pressure management of the system. Development of a formal water loss control program would be incorporated via an amendment to this contract. The Department of Water Management's Water and Sewer Maintenance Division currently administers an informal water loss control program that utilizes acoustic leak detection technology and field valve operation.

Issues and Analysis

In November 2014, the Department of Water Management advertised for a Request for Qualifications (RFQ). Two firms responded to the RFQ:

Hazen and Sawyer, P.C.
McKim & Creed, Inc.

Both firms were short listed to present their proposals to the selection committee. The selection committee was comprised of staff from the Department and Equal Opportunity/Equity Assurance Department. Based on their proposal and experience the committee selected the firm of McKim & Creed, Inc. for the project.

Alternatives

Alternative #1 – Do not move forward with the contract and perform all work in-house. Department staff does not have the resources or availability to update and calibrate a hydraulic model the size of the City's water distribution system. This would result in delayed updates to the hydraulic model. The model is utilized in making decisions about required improvements to the distribution system. Without updating, the model is limited in its ability to accurately represent the existing system and evaluate potential improvements to the system.

Alternative #2 – Do not move forward with the project. This alternative would result in no updates to the hydraulic model, no future demand projections, and no water loss audit. Developing a capital improvement projects plan to meet future demands would be very difficult and minimally effective/accurate.

Financial Impact

The immediate cost to the City for the contract with McKim & Creed is $907,000. The funds for the contract are available as outlined below:

Base Contract Fund:	4100P002-731004-P0BZ8	$907,000.00
Contingency Fund:	4100P002-731900-P0BZ8	$90,000.00
Total Contract Amount		$997,000.00

SDBE Summary

The Equal Opportunity/Equity Assurance Department reviewed the proposal submitted by McKim & Creed, Inc. of Raleigh, North Carolina and have determined that they are in compliance with the Ordinance to Promote Equal Business Opportunities in City Contracting.

SDBE REQUIREMENTS

No MSDBE or WSDBE goals were set.

McKim & Creed, Inc. will subcontract to the following certified firm:

Firm	ID	City/State	Amount	% of Contract
Capstone Civil Group, P.A.	MSDBE	Charlotte, NC	$ 10,200	1.1%

WORKFORCE STATISTICS

Workforce statistics for McKim & Creed, Inc. are as follows:

Total Workforce	355	
Total Females	58	(16%)
Total Males	297	(84%)
Black Males	9	(2%)
White Males	268	(75%)
Other Males	20	(6%)
Black Females	4	(1%)
White Females	52	(15%)
Other Females	2	(1%)